Patent Claims

1. A polyphase encapsulating, gas-insulated outdoor high-voltage switching device with a flat or horizontal construction,
in which a number of circuit breaker interrupter units are arranged parallel to one another in a tubular switch enclosure,
in which, at both ends, these interrupter units have associated cable connections which branch off at an angle to the longitudinal axis of the switch enclosure,
and in which the switch enclosure (1) is arranged on a mounting frame (2) and the switch enclosure has an associated drive device (3) for driving the moveable parts of the interrupter units,
characterized
in that the drive device (3) is arranged to the side of the switch enclosure (1), via a rotary bearing (81) which is arranged in the casing region of the switch enclosure, in order to introduce the drive forces into the switch enclosure (1), and
in that the switch enclosure (1) is provided at the ends with connecting flanges (13, 14) for connection of further encapsulation modules (4, 5), in which case
at least two modules (4) are arranged as further encapsulation modules in order to change the direction of the electrical connections of the interrupter units into the branching line connections (42, 43, 45).

2. The outdoor high-voltage switching device as claimed in claim 1,
characterized
in that the switch enclosure (1) is split asymmetrically transversely (11, 12), with the external diameters (d) of the connecting flanges being less than the external diameter (D) of the switch enclosure.

3. The outdoor high-voltage switching device as claimed in claim 2,
characterized
in that the axially shorter part (12) of the switch enclosure (1) is in the form of a current transformer module.

4. The outdoor high-voltage switching device as claimed in claim 1,
characterized
in that the switch enclosure is split transversely in such a manner that two axially shorter parts (15, 16) are associated at both ends with an axially longer (17) part,
in which the external diameter (d) of the connecting flanges for connection of further encapsulation modules is less than the external diameter (D) of the switch enclosure,
and in that at least one of the axially shorter parts (15, 16) of the switch enclosure is in the form of a current transformer module.

5. The outdoor high-voltage switching device as claimed in one of claims 1 to 4,
characterized
in that the drive device (35, 19) is mounted on a mounting flange (18) in the casing region of the switch enclosure (17) and is coupled via separate lever drives for the individual interrupter units to their moveable contact pieces (74),
in which case the rotary bearing (81) is arranged in a drive enclosure (19) which is connected to the mounting flange, and each lever drive has
a two-armed direction-changing lever (71) whose rotary bearing (82) is supported (26, 77) in an insulating manner (28) at the casing of the switch enclosure.

6. The outdoor high-voltage switching device as claimed in one of claims 1 to 5,
characterized
in that at least one of the direction-changing modules is in the form of a disconnector-grounding device module (60, 61).

7. The outdoor high-voltage switching device as claimed in one of claims 1 to 6,
characterized
in that a three-pole cable connection module (46) is connected with at least one of the two direction-changing modules (60).

8. The outdoor high-voltage switching device as claimed in claim 7 having a direction-changing module to which a cable connection module is fit,
characterized
in that a tubular encapsulation module of a horizontally running three-phase busbar is connected to the second direction-changing module (47).

9. The outdoor high-voltage switching device as claimed in one of claims 1 to 6,
characterized
in that at least one of the two direction-changing modules is in the form of a splitting module (4) with connections, which branch off upwards in a spread manner, for outdoor bushings (45).

10. The outdoor high-voltage switching device as claimed in claim 9 having a first direction-changing module which is in the form of a splitting module,
characterized
in that a splitting module (49) having connections, which branch off upwards in a spread manner, for outdoor bushings (45) are fit to the second direction-changing module (60).

11. The outdoor high-voltage switching device as claimed in claim 9 having a first direction-changing module which is in the form of a splitting module (4), characterized
in that a tubular encapsulation module of a horizontally running three-phase busbar is connected to the second direction-changing module (47).

12. The outdoor high-voltage switching device as claimed in one of claims 9 to 11,
characterized
in that the connections for the outdoor bushings (42, 43, 44) lie in a common vertical plane.

13. The outdoor high-voltage switching device as claimed in claim 12,
characterized
in that each direction-changing module, which is in the form of a splitting module (4), is in the form of a short hollow cylinder (41) from which an enclosure region (42), which widens like a funnel, branches off radially and merges into a number of connecting flanges (43), with the connection plane of these connecting flanges lying tangentially against a part of a circle (44) which runs concentrically with respect to the axis of the splitting module.

14. The outdoor high-voltage switching device as claimed in one of claims 1 to 6,
characterized
in that a tubular encapsulation module of a horizontally running three-phase busbar is connected to the one direction-changing module (47),
and in that a further, identical direction-changing module (48) is connected to the other, vertically aligned direction-changing module (48), adjacent to it upwards, for coupling a second busbar which runs parallel to the first busbar.

15. The outdoor high-voltage switching device as claimed in one of claims 1 to 14,
characterized
in that a voltage transformer module (6) is - possibly additionally - connected to one of the two direction-changing modules (60, 61).

16. The outdoor high-voltage switching device as claimed in one of claims 1 to 5,
characterized
in that an encapsulation module (5) is arranged between a connection flange (13) of the switch enclosure (1) and a direction-changing module (4), in order to accommodate switch disconnectors and/or combined switch disconnector/grounding switches.

17. The outdoor high-voltage switching device as claimed in claim 16,
characterized
in that a voltage transformer module (6) is connected to the disconnector module or to the disconnector-grounding device module (5).

18. The outdoor high-voltage switching device as claimed in claim 6 having two direction-changing modules which are in the form of disconnector-grounding device modules and are aligned vertically,
characterized
in that a splitting module (54) with connections, which branch off upwards in a spread manner, for outdoor bushings (45) are fit to each direction-changing module (60, 61),
in which case the outdoor connections (55) of the respective splitting module lie in a common plane which is inclined to the vertical.

19. The outdoor high-voltage switching device as claimed in claim 9 having two direction-changing

modules which are provided [lacuna] connections, which are in the form of splitting modules and branch off upwards in a spread manner, for outdoor bushings,
characterized
in that further encapsulation modules are arranged between a connection flange (13, 14) of the switch enclosure (25) and one of the two direction-changing modules (31, 33), at least one (60, 61) of which further encapsulation modules is used to change the direction of the current path through 90° in a horizontal plane.

20. The outdoor high-voltage switching device as claimed in claim 19,
characterized
in that the further encapsulation modules are essentially disconnector-grounding device modules (60, 61, 62, 63, 50, 51) and circuit breaker modules (21, 22, 23, 24), which are used to produce what is referred to as an H-circuit.

21. The outdoor high-voltage switching device as claimed in claim 20,
characterized
in that a first and second disconnector-grounding device module (5, 60; 5, 61) are respectively arranged on both sides of a circuit breaker (25), in which case a cable connection module is connected to the first disconnector-grounding device module (5) and a further circuit breaker (25) is connected to the second disconnector-grounding device module (60, 61), having a direction-changing module which is in the form of a splitting module (4) for outdoor bushings (45) which branch off upwards in a spread manner.

22. The outdoor high-voltage switching device as claimed in claim 19 having a 90° direction-changing

module which is in the form of a disconnector-grounding device module,
characterized
in that further encapsulation modules are connected to the splitting module which is connected via the horizontal 90° direction-changing module, at least one of which encapsulation modules is a horizontal 90° direction-changing module in the form of a disconnector-grounding device module, and at least one other encapsulation module is a splitting module.

23. The outdoor high-voltage switching device as claimed in claim 19,
characterized
in that three disconnector-grounding device modules (50, 60, 62), which are arranged diagonally opposite at right angles to one another, are provided as further encapsulation modules, of which the central module (60) is connected via an additional circuit breaker module (22) to a second outdoor high-voltage switching device (21, 32, 33, 51, 61, 63) which has an identical construction and is arranged in mirror-image form.